

CLAIMS:

1. A method of making a pre-formed tubular member, said method comprising the steps of:

providing a tubular member extending longitudinally;

providing a bending assembly having a mandrel with at least one ball and a bend die;

positioning the at least one ball inside of the tubular member;

bending the tubular member about the bend die to form a bent pre-formed tubular member having at least one curved portion having a recess therein.

2. A method as set forth in claim 1 wherein the mandrel has a generally circular cross-sectional shape.

3. A method as set forth in claim 1 including the step of positioning a portion of the mandrel inside the tubular member prior to said step of bending.

4. A method as set forth in claim 1 wherein the bend die has a generally elliptical cross-sectional shape.

5. A method as set forth in claim 1 wherein the at least one ball has a cross-section less than a cross-section of the mandrel.

6. A method as set forth in claim 1 wherein said step of providing a bending assembly further comprises providing a first ball, a second ball, and a third ball.

7. A method as set forth in claim 6 wherein the first ball and the second ball have a similar cross-sectional shape.

8. A method as set forth in claim 6 wherein the first ball and the second ball have a height greater than a height of the third ball.

9. A method as set forth in claim 6 wherein the first ball, second ball, and third ball each have a projection extending axially outwardly.

10. A method as set forth in claim 1 wherein said step of providing a tubular member comprises providing a tubular member having a generally circular cross-sectional shape.

11. A method as set forth in claim 1 wherein the tubular member is made of a metal material.

12. A method of making a curved hydroformed tubular member, said method comprising the steps of:

positioning a bent pre-formed tubular member having at least one curved portion with a recess therein between open die halves mating with one another to define a tubular cavity portion;

progressively closing the die halves to progressively deform the bent pre-formed tubular member within the tubular cavity portion;

applying hydraulic pressure to expand and conform the bent pre-formed tubular member to the tubular cavity portion to form a curved hydroformed tubular member; and

separating the die halves and removing the curved hydroformed tubular member from the die.

13. A method as set forth in claim 12 including the step of making the bent pre-formed tubular member.

14. A method as set forth in claim 13 wherein said step of making the bent pre-formed tubular member comprises providing a tubular member extending longitudinally.

15. A method as set forth in claim 14 wherein said step of making the bent pre-formed tubular member further comprises providing a bending assembly having a mandrel with at least one ball and a bend die.

16. A method as set forth in claim 15 wherein said step of making the bent pre-formed tubular member further comprises positioning the at least one ball inside of the tubular member.

17. A method as set forth in claim 16 wherein said step of making the bent pre-formed tubular member further comprises bending the tubular member about the bend die to form the bent pre-formed tubular member having at least one curved portion having a recess therein.

18. A method of making a curved hydroformed tubular member, said method comprising the steps of:

providing a tubular member extending longitudinally;

providing a bending assembly having at least one ball and a bend die;

positioning the at least one ball inside of the tubular member;

bending the tubular member about the bend die to form a bent pre-formed tubular member having at least one curved portion having a recess therein;

positioning the bent pre-formed tubular member between open die halves mating with one another to define a tubular cavity portion;

progressively closing the die halves to progressively deform the bent pre-formed tubular member within the tubular cavity portion;

applying hydraulic pressure to expand and conform the bent pre-formed tubular member to the tubular cavity portion to form a curved hydroformed tubular member; and

separating the die halves and removing the curved hydroformed tubular member from the die.